

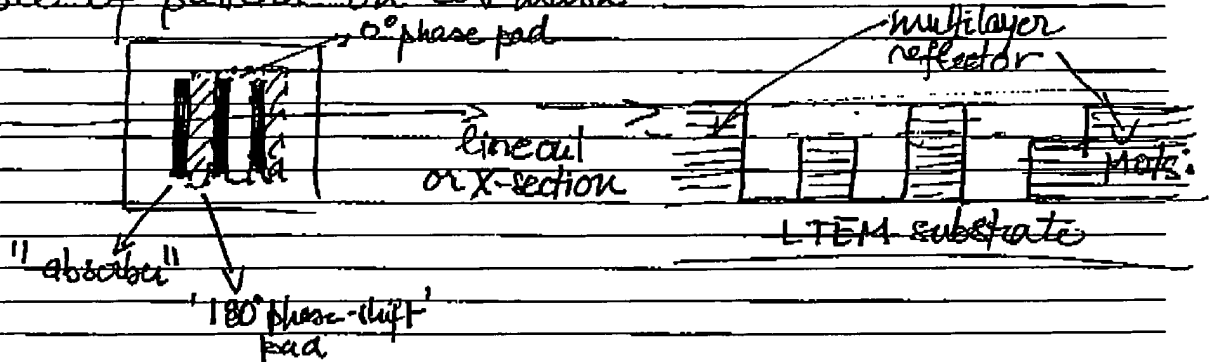
Identify known relevant art (patents, publications, other information):

- Alternative PSM exist for transmission mask (at 248nm, 193nm, for instance). They allow to print smaller features or higher resolution, and more dense patterns than binary masks
- 1) • Patent application by 'B. LaFontaine + Laurent Jieu'
  - 2) • " " " by B. LaFontaine, Y. Deng + C. Gerce'

State the problem solved by the invention: A need for resolution enhancement technique for EUV (reflective) mask.

Brief description and sketch of the invention (please attach copies of documents like AMD patent notebook pages, reports and drawings that are helpful in describing / understanding the invention):

Example of pattern on EUV mask:



- The "absorber" part is obtained by etching the multilayer completely down to the substrate, preventing EUV light to be reflected. (see patent applic ref #1)
- The "180° phase-shift" pad is obtained by etching partly through the multilayer so as to produce the 180° phase shift compared to light reflected from the original (or not etched) multilayer area.

(ref. #2 pat. application)

⇒ Also, the transition from a "0°" to "180°" pad in areas where no pattern is desired on the wafer can be achieved by etching the multilayer in the intermediate area with a slight slope [see drawing]. This could be achieved with ion-beam profiling, for instance.

Witness 1 initial: \_\_\_\_\_

Witness 2 initial: \_\_\_\_\_

1095 for Deposition NGL Lithography - Revised on 10/2001

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illustrative phase  
Top view of transition

